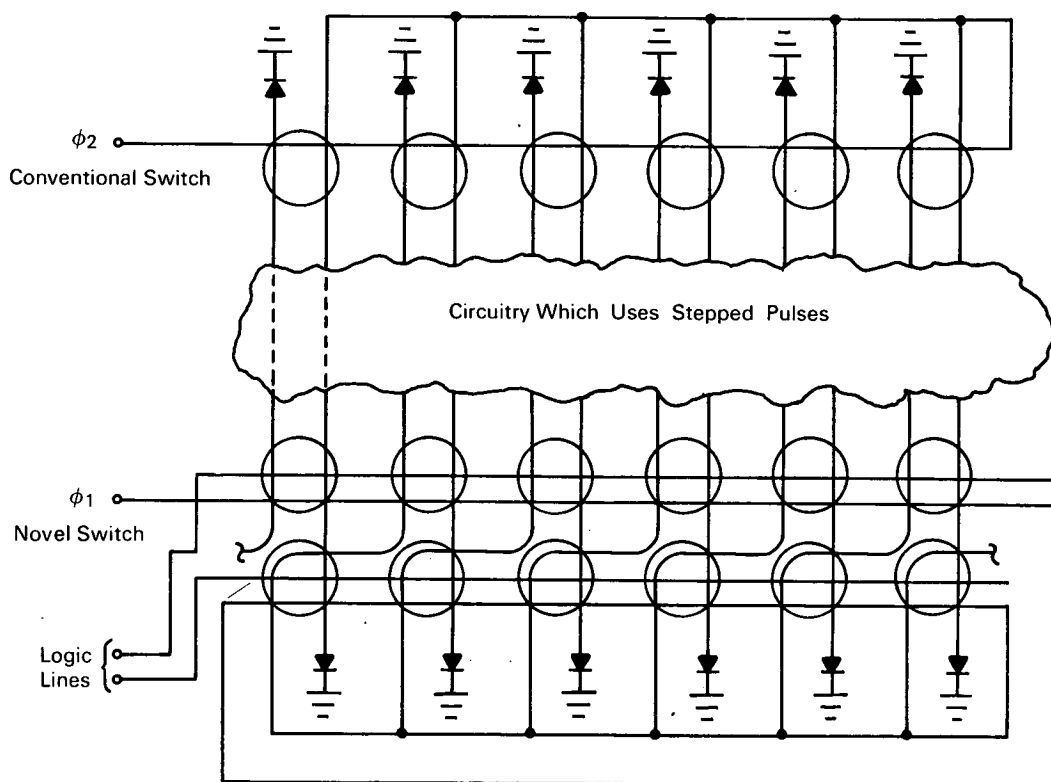


# NASA TECH BRIEF



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## Current Steering Commutator Offers Versatility



### The problem:

Current steering switches have frequently been used in pairs as gated pulse sequence generators. These switches are limited in that they can be stepped only through a predetermined cyclic sequence. Utility of a commutator would be extended if the sequence could be altered on the basis of some decision made at any step within the sequence.

### The solution:

A novel current steering commutator capable of stepping to all possible locations from any location by appropriate control logic, and which is easily tailored to specific user requirements.

### How it's done:

The novel current steering commutator is made by coupling a conventional steering switch and a

(continued overleaf)

novel switch. Whereas the conventional steering switch has one core at each output, the novel switch has many. Each of these cores represents a step span that results in a steered output at that path. The cores of the novel switch are arranged in a "matrix" and are laced with wires from the conventional switch and the control logic. The novel switch outputs are laced through the cores of the conventional switch in the normal manner.

A commutator is operated in the usual two phase cycle: Phase 1, the novel switch is pulsed and an output pulse appears. In the normal manner, a core in the conventional switch is set and the output pulse is utilized. Phase 2, the conventional switch is pulsed and external lines are pulsed in accordance with the required step span and direction. One core in the novel switch is set and the output pulse is utilized. A six-stage commutator which illustrates the technique is shown schematically in the figure. It is capable of

advancing forward by one step or repeating a step upon command.

**Note:**

Inquiries concerning this invention may be directed to:

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Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, California 91103  
Reference: B67-10410

**Patent status:**

The invention is owned by NASA, and a patent application has been filed. Royalty-free, nonexclusive licenses for its commercial use will be granted by NASA. Inquiries concerning license rights should be made to NASA, Code GP, Washington, D.C. 20546.

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(JPL-812)